

Warm-up!
Solve for x.

1. $2x + 5 + 3x = 35$

2. $6x + 3 - 4x + 12 = 19$

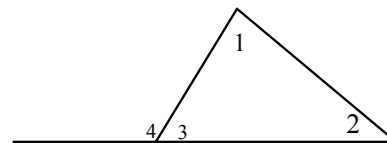
3. $8x + 25 + 10x + 2x + 15 = 180$

$$\begin{aligned} 1. \quad 2x + 5 + 3x &= 35 \\ 5x + 5 &= 35 \\ 5x &= 30 \\ x &= 6 \end{aligned}$$

$$\begin{aligned} 2. \quad 6x + 3 - 4x + 12 &= 19 \\ 2x + 15 &= 19 \\ 2x &= 4 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} 3. \quad 8x + 25 + 10x + 2x + 15 &= 180 \\ 20x + 40 &= 180 \\ 20x &= 140 \\ x &= 7 \end{aligned}$$

4.2 Angle Measures of a Triangle



$$\begin{aligned} m\angle 1 + m\angle 2 + m\angle 3 &= 180 \\ 180 &= m\angle 4 + m\angle 3 \\ m\angle 1 + m\angle 2 + \cancel{m\angle 3} &= m\angle 4 + \cancel{m\angle 3} \\ m\angle 1 + m\angle 2 &= m\angle 4 \end{aligned}$$

Cabri or GSP

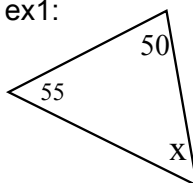
Theorem 4.1--Triangle Sum Theorem-The sum of the measures of the angles of a triangle is 180

Theorem 4.2--The exterior Angle Theorem-The measure of an exterior angle of a triangle is = to the sum of the measures of the 2 nonadjacent interior angles.

$$m\angle 1 + m\angle 2 = m\angle 4$$

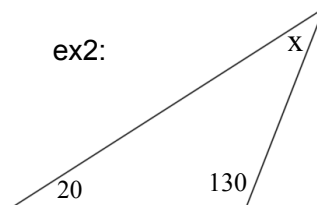
Examples

ex1:



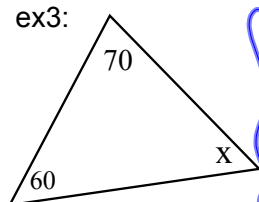
$$\begin{aligned} x + 55 + 50 &= 180 \\ x + 105 &= 180 \\ x &= 75 \end{aligned}$$

ex2:



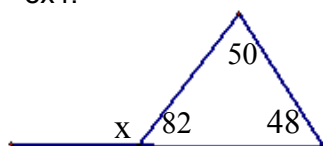
$$\begin{aligned} x + 20 + 130 &= 180 \\ x + 150 &= 180 \\ x &= 30 \end{aligned}$$

ex3:



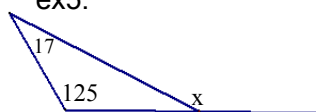
$$x = 50$$

ex4:



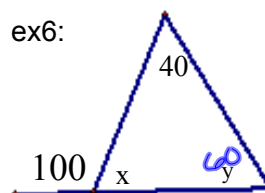
$$\begin{aligned} \text{ext} &= \text{sum of nonadj int} \\ x &= 50 + 48 \\ x &= 98 \end{aligned}$$

ex5:



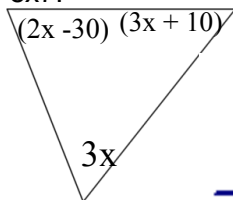
$$\begin{aligned} x &= 17 + 125 \\ x &= 142 \end{aligned}$$

ex6:

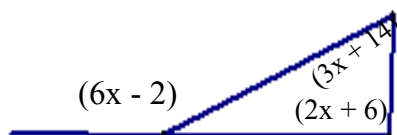


$$\begin{aligned} 100 &= 40 + y \\ 60 &= y \\ x + 40 + 60 &= 180 \\ x &= 80 \end{aligned}$$

ex7:



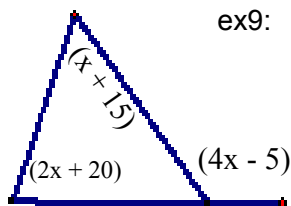
ex8:



$$\begin{aligned} 3x + 2x - 30 + 3x + 10 &= 180 \\ 8x - 20 &= 180 \\ 8x &= 200 \\ x &= 25 \end{aligned}$$

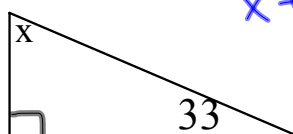
$$\begin{aligned} \text{ex8} \\ 6x - 2 &= 2x + 4 + 3x + 14 \\ 6x - 2 &= 5x + 20 \\ -5x \quad -5x \\ x - 2 &= 20 \\ x &= 22 \end{aligned}$$

ex9:



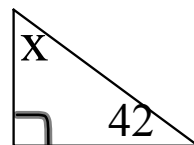
$$\begin{aligned} 4x - 5 &= 2x + 20 + x + 15 \\ 4x - 5 &= 3x + 35 \\ x - 5 &= 35 \\ x &= 40 \end{aligned}$$

ex10:



$$\begin{aligned} x + 33 &= 90 \\ x &= 57 \end{aligned}$$

ex11:



$$\begin{aligned} x + 42 &= 90 \\ x &= 48 \end{aligned}$$

Corollary--the acute angles of a right triangle are complementary.

HW p182-183
6-14, 18-20

Attachments

Exterior_interactive.gsp